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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,302	01/27/2004	Ares J. Rosakis	14850-002001	9346
20985	7590	02/24/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			TURNER, SAMUEL A	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/766,302	Applicant(s) ROSAKIS ET AL.	
	Examiner Samuel A. Turner	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10 and 12-20 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/1/04, 12/17/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Title

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

The drawings are objected to because figures 1-3 must be labeled as prior art. Figure 4 is informal having hand written numerals and legends. Further, solid black shading in figure 4 is not permitted. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

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Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Claim Rejections - 35 USC § 102

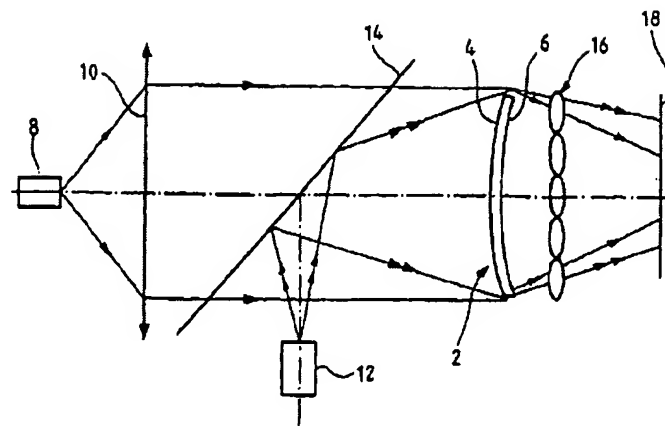
The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 9, 13, 14, 16-18 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Devie et al(WO 02/16902). See U.S. 6,909,498 for an English translation.

FIG_1

With regard to claim 8, Devie et al teach a method, comprising:

directing an optical reflection off a sample plate into a first optical shearing interferometer to obtain a first map of wavefront slopes of the optical reflection indicative of the reflective surface of the sample plate(page 6);

directing an optical transmission through the sample plate into a second optical shearing interferometer to obtain a second map of wavefront slopes of the optical transmission wavefront indicative of the variations in the optical path across the sample plate(page 6); and

processing the first and second maps to obtain information on the sample plate(page 6).

As to claim 9, further comprising adjusting incident angle of input probe light to the sample plate(page 6). Such that the light beam is along the axis of the component.

As to claim 13, further comprising: directing optical reflection off a second reflective surface of the sample plate into a third optical shearing interferometer to obtain a third map of wavefront slopes of the optical reflection indicative of the second reflective surface of the sample plate, wherein the processing further includes processing the third map(page 6).

As to claim 14, wherein the information to be obtained on the sample plate includes at least one of a surface flatness, surface wedge, surface slope, and surface topology of the sample plate(page 6, page 14).

With regard to claim 16, Devie et al teach a method, comprising:

directing an optical probe beam with a uniform wavefront to transmit through a sample plate(8,12; page 6);

using an optical shearing interferometer to receive optical transmission of the input probe beam through the sample plate to produce an optical shearing interference pattern(page 5); and

processing the optical shearing interference pattern to obtain a wavefront gradient map of the optical transmission(pages 6 to 7).

As to claim 17, further comprising processing the wavefront gradient to obtain a wedge slope map of the thickness of the sample plate(page 6).

As to claim 18, further comprising processing the wavefront gradient to obtain a slope map of a refractive index of the sample plate(page 14).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Devie et al(WO 02/16902).

With regard to claim 1 Devie et al teach a system, comprising:

a sample holder to hold a sample(page 6);

an optical input collimator to collimate an input probe beam, and to direct the input probe beam to the sample(10, page 6);

a first optical shearing interferometer located to receive optical transmission of the input probe beam through the sample(page 5);

a second optical shearing interferometer located to receive optical reflection of the input probe beam from the sample(page 6); and

a processor to receive output signals from the first and the second optical shearing interferometers and operable to process the output signals to produce measurements of the sample(page 6).

Devie et al fail to specifically teach wherein both the reflection and the transmission tests are combined into a single configuration.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Devie apparatus by replacing one of the combined transmission wavefront tests with a reflection test in order to obtain the profile of the side tested.

As to claim 6, wherein the processor operates to produce full-field measurements of surface flatness, surface wedge, surface slope, and surface topology of the sample(page 6).

As to claim 7, wherein the first optical shearing interferometer is different from a CGS device(page 5). As Devie fails to limit which lateral shearing interferometer is used it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any known shearing interferometer, such as a shear plate or single grating.

Claims 2-4, 10, 12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Devie et al(WO 02/16902) as applied to claims 1, 6, and 7 above, and further in view of Schreiber et al(Applied Optics-8-1997).

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Devie et al fail to teach a specific lateral shearing interferometer.

However, Schreiber et al teach a two grating interferometer, an CGS device, wherein both the lateral and the axial movement of one grating is adjusted with respect to the other grating (page 5323, section 3).

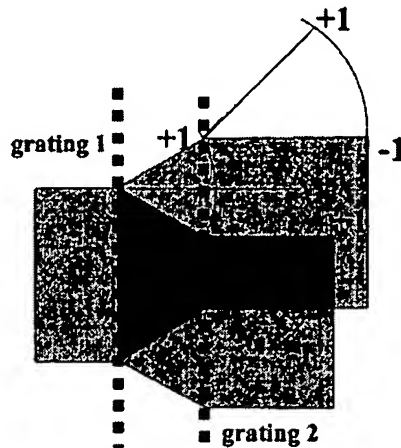


Fig. 1. New interferometer, consisting of two Ronchi phase gratings in series.

With regard to claims 2-4, 10, 12, 19, and 20, Devie et al fails to teach specifically wherein the first and the second optical shearing interferometers are coherent gradient sensing (CGS) devices.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any known shearing interferometer, including the two grating lateral shearing interferometer of Schreiber since the Schreiber grating allows both phase control and phase scanning (section 3).

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Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Devie et al(WO 02/16902) as applied to claims 1, 6, and 7 above, and further in view of Boyd et al(6,469,788).

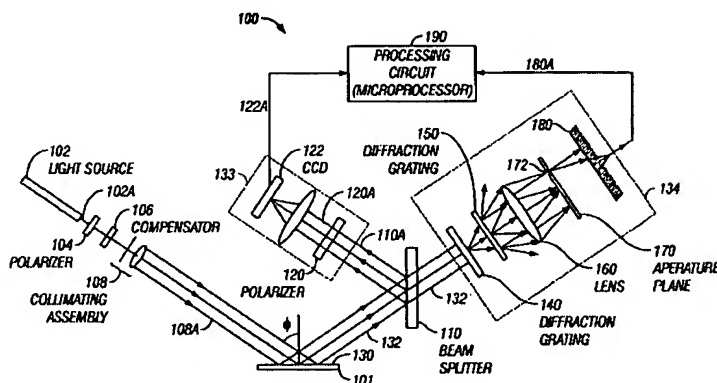


FIG. 1

With regard to claim 15, Devie et al fail to teach any polarization control. However, Boyd et al teach placing a polarizer 104 between the source 102 and the lateral shearing interferometer 134.

It would have been obvious to one of ordinary skill in the art at the time the invention was made modify the Devie apparatus by placing a polarizer between the source and the lateral shearing interferometer in order to control the polarization of the incident light beam to provide ellipsometry measurements as found in Boyd.

Allowable Subject Matter

Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior

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art of record fails to teach the use of different source wavelengths for each shearing interferometer.

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Abitol et al(5,825,476) figures 13-15, and 24-27, and Mazuet et al(6,043,885) figures 4 and 7.

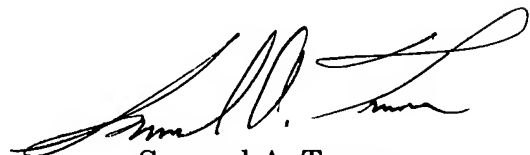
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Samuel A. Turner', with a stylized flourish at the end.

Samuel A. Turner
Primary Examiner
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